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ABSTRACT

To verify assumptions concerning content validity and to qualify relationships between tests and criteria, three validation studies of the United States Employment Service Dictation, Spelling, and Typing Tests were carried out in cooperation with 18 State Employment Services. Study I, validation of the Spelling and Dictation Tests, revealed a moderately low positive relationship between workers' Dictation Test scores and supervisors' ratings and also some relationship between Spelling Test scores and supervisors' ratings of ability to take and transcribe dictation. Study II, a follow-up on the Typing and Spelling Proficiency Tests, revealed a moderate but highly significant correlation between typing scores and spelling test scores as well as correlations between typing scores and supervisory ratings. Study III, relationship of Typing Test performance with supervisors' evaluation of on-the-job performance, revealed little or no predictive validity between typing scores and supervisors' evaluations and that a satisfactory-unsatisfactory criterion was not suitable for this type of research. Summary, purpose, procedures, and recommendations are included for each study. Selected study forms are appended. (SB)

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Three Validation Studies of Clerical Skills Tests

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U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION

USTES Test Research Report No. 27

THREE VALIDATION STUDIES OF CLERICAL SKILLS TESTS

U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION

October 1969

FOREWORD

Extensive research conducted under the Federal-State cooperative test research program in the Training and Employment Service has led to the development of many tools useful in vocational counseling and placement. These tools include aptitude tests, proficiency tests, and non-cognitive measures based on instruments such as interest inventories and biographical information blanks.

The purpose of this series of reports is to provide results of significant test research projects as they are completed. These reports will be of interest to users of the tests and to test research personnel in other organizations.

This report was prepared in the Division of Counseling and Testing Services of the United States Training and Employment Service by Eileen D. Haggerty and Marlin L. Ferral under the general direction of Anthony J. Fantaci, Chief of the Division, and Beatrice J. Dvorak, Assistant Chief of the Division. Statistical services were provided by John A. Hawk of the Division of Counseling and Testing Services.

U.S. Training and Employment Service

ACKNOWLEDGEMENTS

The research described in this report was carried out by the U.S. Training and Employment Service in cooperation with 18 State Employment Services. The cooperating States are listed by study number, as follows:

Study I: New York

Study II: Arizona
Florida
Maryland
New Jersey
Tennessee

Study III: California
Georgia
Illinois
Louisiana
Minnesota
North Carolina
Ohio
Oklahoma
Rhode Island
Texas
Virginia
Washington

THREE VALIDATION STUDIES OF CLERICAL SKILLS TESTS

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Introduction

This report describes the results of three validation studies of the USES Dictation, Spelling and Typing Tests. Studies of the criterion-related validity of proficiency tests are rare because such tests are generally acknowledged to possess content validity when the knowledges and skills needed for success on the tests correspond to knowledges and skills specified in descriptions of jobs for which the tests are used. These studies serve to verify some of our assumptions concerning content validity, to uncover some areas in which the assumptions may not hold, and to quantify relationships between tests and criteria.

There are some built-in difficulties in attempting to correlate proficiency tests with job proficiency. These tests have a strong tendency to eliminate applicants who are incapable of performing at a satisfactory level of competence. For example, an applicant who can type well enough to be hired as a typist can probably type well enough to be considered at least marginally satisfactory on a job requiring typing. Thus a dichotomy of satisfactory vs unsatisfactory performance such as that used as a criterion in Study III in this report fails to show any validity at all for the typing test used. To a lesser extent, the decreased variability in skills of successful job applicants in Studies I and II must have reduced the magnitude of some of the test-criterion relationships that were found.

A second major area of difficulty in clerical proficiency test validation concerns the heterogeneity of job duties within presumably equivalent jobs. A wide variety of jobs include typing and dictation duties. In a study performed in 1951, Nelson took his job definitions from the Dictionary of Occupational Titles and restricted his sample to women under 30 with less than three years experience on the job. However, he found that there was an extremely wide range in time spent on duties. For example, estimates on dictation time ranged from 5 percent to 90 percent (Nelson, 1951). It is not likely that the same proficiency of performance is required for such widely different positions.

Nelson also pointed out that adequate job analysis requires closer examination of the many related elements of work other than dictation and transcription speed and errors and that duties listed most frequently are not necessarily the critical ones for job success. Nelson was not able to investigate the reliability of criterion measures because employers refused to re-rate employees.

Irol Whitmore Balsley concluded that the speed of producing mailable copy on the job depended on a number of factors including the speed of correcting typing errors (Balsley, 1956). Supervisors' ratings reflect an individual's total performance and, in view of Balsley's findings, are not likely to relate exclusively to test measured performance.

In two of the three studies reported here, there is demonstrable criterion-related validity of the USES Dictation, Spelling and Typing Tests for predicting job performance. The third study served to show that a simple satisfactory vs unsatisfactory criterion was not suitable for this type of research because of the preselection that necessarily takes place in clerical jobs.

STUDY I

VALIDATION OF THE NEW USES SPELLING AND DICTATION TESTS (FORM A)

Summary

This report describes a concurrent validation study of USES Spelling and Dictation Test performance against supervisory ratings of job performance of employed stenographers and secretaries. The relationships between Dictation Test performance and criterion scores were moderately low and positive (.16 to .32). Relationships between Spelling Test performance and the criterion scores were low to negligible (.05 to .21). The interrelationship of the Spelling and Dictation Test scores was .47.

Purpose

The purpose of this study is to determine the relationship of scores on the USES Spelling Test and the new USES Dictation Test (Form A) and supervisory ratings of job performance for employed workers.

Procedure

Employed stenographers and secretaries--124 of whom were included in the normative study (U.S. Department of Labor, October 1968) and 60 additional subjects--were tested with Form A of the USES Spelling and Dictation Tests according to standard directions in the Manual for USES Clerical Skills Tests (U.S. Department of Labor, March 1968). The Dictation Test was administered at 80 wpm on a "live" basis to groups that ranged in size from 4 to 15 persons. Raw scores and decile scores were recorded for both tests. Data were collected for sex, age in years, education in years, and job tenure in the following categories: (1) under 6 months, (2) 6 months to 1 year, (3) over 1 year to 3 years, (4) over 3 years to 10 years, and (5) over 10 years.

Three criterion measures were obtained for each subject, as follows: Part I (ratings on taking and transcribing dictation), Part II (ratings on over-all job proficiency), and Total Criterion (Parts I and II combined). The experimental descriptive rating scale is shown in Appendix A.

Results and Discussion

Means and standard deviations are shown on Table I-1. The fact that the mean Dictation Test raw score is less than one standard deviation below the maximum score of 125 indicates that the Dictation Test at 80 wpm is easy for this employed worker sample. The decile mean score of 5.5 is the same as the mean for the nation-wide sample upon whom the decile scoring system is based (U.S. Department of Labor, October 1968).

Table I-1

Means and Standard Deviations (N = 184)

		Means	Standard Deviations
Sample Characteristics	Age (years)	28.1	11.8
	Education (years)	12.3	1.3
	Job Tenure*	3.1	1.1
Test Score	Dictation Raw Score	113.4	14.3
	Dictation Decile Score	5.5	2.8
	Spelling Decile Score	5.3	2.7
Criterion Scores	Criterion Part I Score	11.0	1.8
	Criterion Part II Score	19.5	3.4
	Total Criterion Score	30.6	4.9

* Job tenure is expressed on a 1 to 5 basis, as follows: 1 -- under 6 months, 2 -- 6 months to 1 year, 3 -- over 1 year to 3 years, 4 -- over 3 years to 10 years, 5 -- over 10 years.

Table I-2 shows correlations between biographical data and scores for criteria and tests. The relationship between Job Tenure and all three criterion scores is statistically significant. Job Tenure does not correlate significantly with Dictation Test decile scores. There are significant correlations of age and tenure with Spelling Test decile scores.

Table I-2

Correlations of Age, Education, and Job Tenure with Criterion and Decile Test Scores (N = 184)

	Criterion Part I	Criterion Part II	Total Criterion	Spelling Decile	Dictation Decile
Age	.14	.10	.12	.34**	.02
Education	.10	.16	.15	.12	-.06
Job Tenure	.31**	.30**	.33**	.20**	.06

** Correlation significantly different from zero at the .01 level.

Validity coefficients are shown on Table I-3. Both the Dictation Test raw score and the Dictation Test decile score have a significant correlation of .32 with Part I (ratings on taking and transcribing dictation). Both Dictation Test scores have smaller but equally significant correlations with the Total Criterion. The two Dictation Test scores have less significant correlations with Part II (ratings on overall job proficiency).

Table I-3

Correlation between Test Scores and
Criterion Scores (N - 184)

Test Score	Criterion Part I	Criterion Part II	Total Criterion
Spelling Decile Score	.21**	.05	.11
Dictation Raw Score	.32**	.14	.22**
Dictation Decile Score	.32**	.16*	.24**

* Correlation significantly different from zero at the .05 level.
** Correlation significantly different from zero at the .01 level.

The results indicate that the transformation of Dictation Test raw scores, which are very skewed, to deciles has no effect on the validity of the test. Previous research with the USES Typing Test had indicated that converting raw scores to deciles had little or no effect on reliability (U.S. Department of Labor, February 1968). The Spelling Test decile score correlates .21 (significant at the .01 level) with Part I. Correlations between Spelling Test decile scores and the other criterion scores are not statistically significant. The intercorrelation of Spelling Test decile score and Dictation Test decile score is .47.

Conclusions

1. There is a moderately low positive relationship between Form A of the new USES Dictation Test scores of employed workers and supervisors' ratings.

2. The relationship between the Dictation Test and the dictation-related criterion is greater than the relationships between the Dictation Test and other criteria.

3. There is some relationship between Spelling Test scores and supervisors' ratings of ability to take and transcribe dictation.

4. There were low positive relationships between tenure and the three criterion measures used in this study. The relationships between tenure and the criteria appear to be relatively independent of the relationships between Dictation Test scores and the criteria.

Recommendations for Future Research

1. Validation of other forms of the Spelling and Dictation Tests is recommended.

2. Validation research with an applicant population using a longitudinal design is also recommended.

STUDY II

FOLLOW-UP STUDY ON THE USES TYPING AND SPELLING PROFICIENCY TESTS

Summary

This report describes a longitudinal study of applicants' performance on USES Typing and Spelling Tests and subsequent supervisory rating measures and retest performance scores obtained on the job. Results show that typing speed scores and spelling scores are stable and correlated measurements and that typing speed scores predict performance on jobs requiring typing. Applicants' typing error scores did not predict typing error scores on the job or the supervisory rating measurements.

Purpose

The purpose of this study is to determine predictive validity and reliability of the USES Typing and Spelling Tests.

Procedure

Local office applicants were tested with the USES Typing and Spelling Tests prior to placement, placed in jobs requiring at least one hour of typing per day, and followed up on the job 90 to 120 days after initial testing. Subjects who had been on the job at least 60 days were retested and job performance ratings were obtained from supervisors.

Any form of the typing test was used and administered according to "Directions for Administering and Scoring the New USES Typing Test" (U.S. Department of Labor, March 1968). Subjects were retested on the employer's premises provided that the employee was using the same kind of typewriter (that is, manual or electric) that he used as an applicant examinee. If this condition could not be met, the subject was eliminated from the sample. Subjects were tested initially with Form T62-M of the Spelling Test and retested with Form T63-M. Both tests were administered according to standard directions (U.S. Department of Labor, 1953).

At the time of retesting, a job performance rating was obtained from the immediate supervisor using Form SP-21 (U.S. Department of Labor, 1967).

The information recorded for each subject is listed in Appendix B.

A copy of the experimental design is attached in Appendix C.

Results and Discussion

Table II-1 shows means and standard deviations for 19 variables. The 113 subjects had a mean age of 26 years and approximately three and one-half years experience in jobs requiring typing. Subjects in the normative sample had a mean age of 33 years. The normative sample was representative of all employed Secretaries, Stenographers, and Typists in the U.S. (as reported in the 1960 Census of Population) on geographic distribution, age, education, sex, and industry in which employed (U.S. Department of Labor, March 1968).

Table II-1

Means and Standard Deviations for
Nineteen Variables (N = 113)

Variable Number	Variable	M	SD
1	Age (years)	25.9	8.8
2	Education (years)	12.9	1.4
3	Semester or quarters of typing training completed	4.4	2.3
4	Time between initial testing and last typing training (months)	64.5	88.0
5	Experience in jobs requiring typing (months)	43.9	61.1
6	Time between initial testing and last typing job (months)	16.1	49.7
7	Variable No. 4 or No. 6, whichever is lower	14.4	38.6
8	Initial typing test score -- wpm	53.2	12.3
9	Initial typing test score -- errors	7.0	3.9
10	Initial spelling test score (T62-M)	66.0	9.9
11	Retest typing test score -- wpm	59.1	12.9
12	Retest typing test score -- errors	9.9	6.2
13	Retest spelling test scores (T63-M)	72.0	8.5
14	Typing speed change) Retest score	106.0	6.6
15	Typing accuracy change) minus initial	102.9	6.8
16	Spelling change) score plus a) constant of 100	106.0	6.4
17	Hours per day spent typing on job on which followed up	3.8	1.8
18	Experience on job on which followed up (weeks)	11.7	2.9
19	Supervisory rating score (Form SP-21)	25.1	4.7

Mean retest scores were higher than mean initial test scores. No direct comparison can be made with the normative sample for which data is listed separately for manual and electric typewriter subjects. However, the mean initial wpm score of 53.2 is lower than both means computed for the normative sample.

Supervisory rating scores were normally distributed around the mean of 25.1. Scores ranged from 11 to 35 with a standard deviation of 4.7.

Age, experience in jobs requiring typing, and three variables on time since training or experience are concentrated at the lower ends of the scales. Education is highly concentrated at 12 years.

Table II-2 shows the number and percent of subjects listed by D.O.T. code number for this study and for Study III--Relationship Between Performance on USES Typing Test and Acceptability of Typing Performance to Employers, which is described later in this report. The D.O.T. codes represented in both studies and the percentage of cases in each study having each D.O.T. code number are very similar.

Table II-2

Number and Percent of Subjects Listed by
D.O.T. Code Number for Study II and Study III

D.O.T. Code Number	Study II		Study III	
	Number	Percent	Number	Percent
201.368	20	18	74	16
202.388	15	13	70	15
203.588	2	2	34	7
204.288	1	1		
206.388	1	1		
208.588	6	5	11	2
209.388	46	41	185	39
209.588	2	2	29	6
210.388	1	1	1	(+)
219.388	15	13	29	6
219.488	2	2	1	(+)
237.368	1	1	3	(+)
249.368	1	1	2	(+)
Other D.O.T. Codes*	-	-	30	9
Totals	113	101**	469	100

(+) A fraction of one percent.
* Additional six-digit D.O.T. codes plus 19 incomplete D.O.T. codes are listed in Study III.
** Total percent equals 101 due to rounding.

Table II-3

Product-Moment Correlation Coefficients for Nineteen Variables
(N=113)

Var. No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	.09	.07	.78**	.64**	.52**	.44**	.12	.03	.19*	.12	-.11	.27**	.01	-.12	.06	-.12	.05	.22*
2		-.06	-.07	-.07	.17	.01	.04	.08	.11	.02	.14	.11	-.05	.08	-.02	.08	.16	.13
3			.13	.28**	.02	-.02	.12	.02	.00	.24**	.00	.02	.23**	-.01	.03	.09	.09	-.06
4				.75**	.36**	.45**	.20*	.02	.24**	.24**	-.17	.29**	.09	-.17	.02	.01	.07	.25**
5					.08	.04	.40**	.01	.33**	.46**	-.18*	.35**	.16	-.17	-.04	.02	.19*	.26**
6						.85**	-.13	-.04	.02	-.12	.00	.13	.00	.02	.13	-.01	.03	.12
7							-.17	-.05	.00	-.18*	.00	.08	-.05	.02	.12	-.03	-.05	.09
8								.09	.39**	.87**	-.08	.41**	-.16	-.13	-.06	.10	.33**	.44**
9									-.12	.06	.15	-.08	-.05	-.43**	.08	-.03	.10	.03
10										.42**	-.12	.77**	.10	-.04	-.52**	-.02	.22**	.14
11											-.04	.44**	.35**	-.07	-.06	.13	.31**	.36**
12												-.03	.08	.83**	.14	.02	.02	-.03
13													.12	.02	.15	.04	.09	.22**
14														.10	-.01	.08	.01	-.11
15															.08	.03	-.04	-.04
16																.08	-.22**	.09
17																	.11	-.09
18																		.18

*Significant at the .05 level
**Significant at the .01 level

Intercorrelation data for the 19 variables in this study are shown on Table II-3. No significant correlations were found for education or for hours per day spent typing.

Variable List

1. Age (years).
2. Education (years).
3. Semesters or quarters of typing training completed.
4. Time between initial testing and last typing training (months).
5. Experience in jobs requiring typing (months).
6. Time between initial testing and last typing job.
7. Information listed under Variable No. 4 or Variable No. 6, whichever is lower.
8. Initial typing test score in number of words per minute.
9. Initial typing test score--number of errors.
10. Initial spelling test score (Form T62-M).
11. Retest typing test score in words per minute.
12. Retest typing test score--errors.
13. Retest spelling test score (T63-M).
14. Typing speed change: retest words per minute score minus initial typing test words per minute score plus a constant of 100.
15. Typing accuracy change: retest error score minus initial error score plus a constant of 100.
16. Spelling change: retest spelling test score minus initial spelling test score plus a constant of 100.
17. Hours per day spent typing on job.
18. Experience on job on which followed up (weeks).
19. Supervisory rating score (Form SP-21).

The time variables (age, experience in jobs requiring typing, time since last typing training, time since last typing job, and time since typing training or typing job) are intercorrelated. Also, semesters or quarters of typing training is correlated with experience in jobs requiring typing. In general, the correlations between demographic variables and both test score variables and supervisory ratings are low. Experience in jobs requiring typing, however, correlates significantly with 10 of the 19 variables, and significant correlations with typing speed and spelling scores were found ranging from .33 to .46. The significant relationship of experience and test score variables is compatible with the observation that the employed worker normative sample (which is seven years older on the average and presumably more experienced in jobs requiring typing) has higher typing speed mean scores than the applicant sample.

Test-retest correlations are .87 and .77 for typing wpm scores and for spelling test scores, respectively. Significant correlations of .39 and .41 were computed between typing wpm scores and spelling test scores.

No significant correlation was found between initial and retest typing error scores. Retest typing error score has a -.18 correlation significant at the .05 level with experience in typing jobs.

Typing accuracy change correlated with initial and retest typing error scores. Spelling change correlated with initial spelling test scores.

Like hours-per-day spent typing, experience on the job on which followed up was used as a control variable. Subjects with less than eight weeks on the job were not included in the sample. However, five variables correlate significantly with experience on the job on which followed up. This variable correlates .33 (significant at the .01 level) with initial typing speed score.

Supervisory rating score has low correlations with age, time since typing training, experience in jobs requiring typing, retest spelling scores, and experience on jobs on which followed up. Supervisory rating score correlates .44 with initial typing wpm score and .36 with retest typing wpm score. Supervisory ratings did not correlate significantly with typing error scores.

Conclusions

1. The correlations obtained between typing wpm scores and supervisory rating scores are evidence of validity of typing test speed scores as predictive of performance on jobs requiring typing skill.

2. There is good stability of measurement between initial test and retest performance for typing wpm scores and spelling test scores.

3. There is no apparent stability of measurement between initial test and retest performance on typing error score.

4. There is a moderate but highly significant correlation between typing wpm scores and spelling test scores.

5. Experience in jobs requiring typing is correlated with ten other variables including typing speed scores, spelling scores, and supervisory ratings.

Recommendations

1. The finding that typing error score does not correlate with test performance on the job or with supervisory ratings should receive further investigation. If this finding is supported by additional independent study, typing error score should be eliminated or altered in reporting typing test performance results.

2. In the future, data should be collected separately for applicants who use manual and electric typewriter.

3. In view of the finding that semesters or quarters of typing training completed, time since last typing training, time since last typing job, and time since last training or job do not add anything to the standard background variables (age, education, and experience), they should not be included in future studies.

4. The Supervisory Rating (Form SP-21) appears to be an adequate instrument for rating typing performance on the job and should be considered for use in future studies.

STUDY III

RELATIONSHIP BETWEEN PERFORMANCE ON USES TYPING TEST AND ACCEPTABILITY OF TYPING PERFORMANCE TO EMPLOYERS

Summary

This report describes a longitudinal study of applicants' typing test performance and subsequent supervisors' evaluations of typing performance on the job. No significant validity coefficients were found. However, findings do show that typing skill is essential for a wide range of jobs that do not necessarily require the same level of proficiency in typing. Also, findings indicate the need for preliminary study of criterion measures to insure adequate variance for statistical treatment.

Purpose

The purpose of this study is to determine predictive validity of the USES Typing Test.

Procedure

The USES Typing Test was administered to applicants for positions requiring typing skill. State agencies attempted to follow up each applicant 90 to 120 days after testing and to obtain typing performance evaluations from supervisors for those subjects who had been employed at least eight weeks on a job requiring a minimum average number of two hours typing per day on the same kind of typewriter (manual or electric) as the one used for testing. Any form of the USES Typing Test was administered according to "Directions for Administering and Scoring" in the Manual (U. S. Department of Labor, March 1968).

Data were collected for 15 variables listed in Appendix D.

The experimental plan is in Appendix E, and the Evaluation Sheet used for recording criterion data is in Appendix F. Supervisors were asked to rate subjects as "Fully satisfactory" or "unsatisfactory or only barely satisfactory" on three separate variables: speed of typing, accuracy of typing, and overall typing performance.

Results and Discussion

State agencies tested 1,148 applicants. Forty-one percent of the tested applicants were subsequently evaluated by supervisors. Table III-1 shows for each State and for the combined sample the number of applicants tested, the number eliminated from evaluation (listed in seven descriptive categories), and the number of subjects in the final sample for whom supervisor's evaluations were obtained. The most frequent reason for eliminating subjects from the final sample was that the type of typewriter used on the job was different from the one on which tested.

Table III-1

Number of Subjects Tested, Eliminated from Subsequent Evaluation Defined in Seven Categories, and Evaluated by An Employer Listed by State and for the Combined Sample

State	Number of Subjects								
	Tested	Eliminated							Evaluated
		1	2	3	4	5	6	7	
		Lack of Cooperation by Employer	Subject Never Employed	Subject No Longer Employed Supervisor not able to Rate	Subject Had Not Completed Training Period	Typing Not Required on Present Job	Type of Typewriter Used on Job (Manual or Electric)*	Other Reasons for Elimination	
California	128	0	9	63	6	11	7	1	31
Georgia	80	0	0	12	1	15	12	4	36
Illinois	58	0	1	4	0	3	10	0	40
Louisiana	130	0	37	0	20	8	20	4	41
Minnesota	115	0	4	4	0	9	34	22	42
North Carolina	110	2	6	6	2	8	47	0	39
Ohio	134	9	3	18	4	12	51	5	32
Oklahoma	85	12	0	7	12	6	8	0	40
Rhode Island	43	0	2	2	3	5	0	0	31
Texas	85	0	1	12	0	8	5	16	43
Virginia	113	2	3	6	11	13	21	10	47
Washington	67	0	0	0	0	5	13	2	47
Totals	1148	25	66	134	59	103	228	64	469
Percents**	101	2	6	12	5	9	20	6	41

*Different from type on which tested

**The figure 101 is due to rounding

Table III-2 shows means and standard deviations for age, education, job experience, typing speed score, typing accuracy score, and average number of hours per day spent typing for subjects who were evaluated by supervisors and available comparable data for the national normative sample which was representative of all employed secretaries, stenographers, and typists in the United States (as reported in the 1960 Census of Population) on geographical distribution, age, education, sex, and industry in which employed. Data for both groups is listed separately for subjects tested on manual typewriters and subjects tested on electric typewriters.

Table III-2

Means and Standard Deviations Listed Separately for Manual and Electric Typewriter Subjects on Six Variables for Study III and for Available Data for the Normative Sample

	Study III				Normative Sample*			
	Manual (N=197)		Electric (N=272)		Manual (N=881)		Electric (N=881)	
Variable	M	SD	M	SD	M	SD	M	SD
Age (years)	24.8	8.6	25.8	9.0	33.8		33.4	
Education (years)	12.5	1.0	12.7	1.2	12.4		12.5	
Job Experience (months)	28.2	41.7	37.3	47.3				
Typing Speed Score (wpm)	50.5	10.4	58.9	10.7	59.0		70.0	
Typing Accuracy Score	7.4	5.4	6.8	5.0	8.1	6.2	9.0	7.1
Hours per day +	4.0	1.6	4.5	1.6				

*U. S. Department of Labor, March 1968, pp. 17-18. The sample was representative of all employed Secretaries, Stenographers, and Typists in the U. S. (as reported in the 1960 Census of Population) on five variables: geographical distribution, age, education, sex, and industry in which employed.

+ U. S. Department of Labor, November 1964. Subjects in the normative sample typed at least one hour per day.

The applicant subjects are considerably younger on the average than employed workers. Both applicant groups have lower typing speeds than the normative sample groups.

Typing applicants were employed in eight major industries. Similar data on industry in which employed for subjects in the follow-up study and employed workers in the normative sample are shown on Table III-3.

Table III-3

Number and Percent of Cases by Industry for Study III and the Normative Sample

Industry*	Study III (N=469)		Normative Sample** (N=1762)	
	Number	Percent	Number	Percent
Agriculture, forestry and fisheries			1	
Mining	4	1	11	1
Construction	5	1	3	
Manufacturing	99	21	544	31
Transportation, communication and public utilities	19	4	95	5
Wholesale and retail trade	60	13	214	12
Finance, insurance and real estate	89	19	328	19
Business and repair services	19	4	23	1
Personal services			12	1
Entertainment and recreation	1		2	
Professional and related services	81	17	216	12
Public administration	92	20	313	18

*Data were collected by industry according to the Standard Industrial Classification Manual. (Bureau of the Budget, 1967)

**U. S. Department of Labor, November 1964.

Table III-4 shows number of cases by D.O.T. code numbers and average number of hours per day spent typing for manual typewriter subjects and electric typewriter subjects. Actual D.O.T. six digit code numbers and job titles are listed in Appendix G. In general, a six digit D.O.T. code number does not refer to a specific job but to many different jobs. Hours per day spent typing varies widely within each occupation.

Table III-4

Number of Cases Listed By D.O.T. Code Number and Hours Per Day Spent Typing for Manual and Electric Typewriter Subjects

D.O.T. Code*	Manual Group (N=197) Hours Per Day Spent Typing							Total DOT	Electric Group (N=272) Hours Per Day Spent Typing							Total DOT	Total D.O.T.
	2	3	4	5	6	7	8		2	3	4	5	6	7	8		
1		1						1									1
2										1						1	1
3**	3	4	3	5	1	1		17	4	4	18	11	18	2		57	74
4**	4	3	3	3				13	6	12	15	10	12		2	57	70
5			1					1									1
6	3	3	1	2	2	1	1	13	4		1	3	4	3	6	21	34
7	2		1	1	2			6		2		2	1			5	11
8						1		1									1
9	15	16	26	15	12	4	2	90	13	20	22	15	18	5	2	95	185
10	3	3	1	2	3	1		13	4	2	2		6	2		16	29
11									1							1	1
12				1				1									1
13	1							1									1
14					1			1									1
15**	5	8	5	2	1		1	22		1	2		3		1	7	29
16										1						1	1
17									1							1	1
18	1							1									1
19	1			1				2				1				1	3
20	1	1						2									2
21		1						1									1
22		1						1									1
23	2	2	2	2		2		10	2	1	4		2			9	19
Total Hours	41	43	43	34	22	10	4	197	35	44	64	42	64	12	11	272	469

*Numbers refer to D.O.T. codes shown in Appendix G.

**The distributions for manual and electric typewriter subjects differ significantly on occupation at the .01 level.

Chi square was computed for the distribution of manual and electric typewriter subjects for each D.O.T. code. For three codes, the predominant use of one kind of typewriter was significant at the .01 level. Two categories of stenographers are more likely to use electric machines; one category of clerks is more likely to use manual typewriters.

Typing speed means and standard deviations were computed for subjects in four D.O.T. codes. Data on Table III-5 shows that subjects having D.O.T. codes 3 and 4 have higher typing mean speeds than subjects in D.O.T. codes 9 and 15 and subjects in the total sample. Most subjects in codes 3 and 4 are stenographers and secretaries. Various kinds of clerks are coded 9 and 15.

Table III-5

Typing Speed Score Means and Standard Deviations Listed Separately for Manual and Electric Typewriter Subjects for Four Samples Defined by D.O.T. Code Reference Number and for the Total Sample in Study III

Sample *	Manual Subjects			Electric Subjects		
	N	M	SD	N	M	SD
D.O.T. Code 3	17	56.4	12.4	57	61.7	11.4
D.O.T. Code 4	13	56.2	6.2	57	61.4	9.5
D.O.T. Code 9	90	50.0	9.9	95	53.1	10.0
D.O.T. Code 15	22	49.3	12.5	7	51.6	12.9
Total(Study III)	197	50.5	10.4	272	58.9	10.7

*Complete D.O.T. code numbers and job titles are listed in Appendix D.

Correlations of ordered variables are shown on Tables III-6, III-7, and III-8 for the total sample, manual subjects, and electric subjects, respectively. The correlation between type of typewriter used and typing speed is .36 (significant at the .01 level).

Table III-6

Product Moment Correlation Coefficients for the Total Sample on Eleven Variables (N=469)

	Education	Job Experience	Typing Speed Score	Typing Accuracy Score	Type of Typewriter	Hours Per Day	Experience on Present Job	Supervisor's Evaluation-Speed	Supervisor's Evaluation-Accuracy	Supervisor's Evaluation-Overall
Age	.07	.68**	.13**	-.04	.06	.04	-.02	.10*	-.02	.02
Education		.01	.20**	-.03	.07	-.01	.08	-.05	-.04	-.05
Job Experience			.24**	.04	.10*	.05	-.01	.01	-.05	-.01
Typing Speed Score				-.03	.36**	.09	-.05	-.11*	-.09	-.08
Typing Accuracy Score					-.05	-.02	-.03	-.02	.00	-.03
Type of Typewriter						.16**	.00	-.02	-.03	-.02
Hours Per Day							.05	-.01	.00	-.02
Experience on Present Job								-.02	.01	.03
Supervisor's Evaluation Speed									.53**	.61**
Supervisor's Evaluation Accuracy										.79**

* Correlation significant at the .05 level
**Correlation significant at the .01 level

Table III-7

Product-Moment Correlation Coefficients for Manual Typewriter Subjects for Ten Variables
(N=197)

	Education	Job Experience	Typing Speed Score	Typing Accuracy Score	Hours Per Day	Experience on Present Job	Supervisor's Evaluation: Speed	Supervisor's Evaluation: Accuracy	Supervisor's Evaluation: Overall
Age	.13	.73**	.18*	-.07	.16*	.03	.03	-.06	.03
Education		.09	.13	-.01	.01	-.07	-.10	-.01	-.03
Job Experience			.25**	.03	.17*	-.01	.05	.00	.11
Typing Speed Score				.09	.15*	.03	-.06	-.08	-.06
Typing Accuracy Score					.02	-.12	-.05	-.01	-.06
Hours Per Day						.11	.06	.06	.00
Experience on Present Job							.02	.01	.00
Supervisor's Evaluation: Speed								.49**	.61**
Supervisor's Evaluation: Accuracy									.68**

*Correlation significant at the .05 level

**Correlation significant at the .01 level

Table III-8

Product-Moment Correlation Coefficients for Electric Typewriter Subjects for Ten Variables
(N=272)

	Education	Job Experience	Typing Speed Score	Typing Accuracy Score	Hours Per Day	Experience on Present Job	Supervisor's Evaluation: Speed	Supervisor's Evaluation: Accuracy	Supervisor's Evaluation: Overall
Age	.03	.65**	.07	-.01	-.05	-.05	.15	.01	.01
Education		-.04	.23	-.05	-.05	-.08	-.01	-.06	-.06
Job Experience			.20	.06	-.05	-.01	-.01	-.08	-.08
Typing Speed Score				-.10	-.05	-.11	-.15	-.10	-.09
Typing Accuracy Score					-.05	.01	-.01	.00	-.01
Hours Per Day						.02	-.05	-.03	-.02
Experience on Present Job							-.05	.01	.05
Supervisor's Evaluation: Speed								** .57	** .60
Supervisor's Evaluation: Accuracy									** .89

**Correlation significant at the .01 level

The three criterion scores have moderately high intercorrelations. For each of three samples, the highest criterion score intercorrelation is between supervisor's accuracy evaluation and supervisor's overall evaluation. The statistical findings support the general experience of State agencies that employers place highest value on typing accuracy.

Only 61 out of 469 subjects or 13% of the total sample were rated unsatisfactory on one or more criterion variables. The distributions for criterion variables are shown, as follows:

Rating	Supervisor's Evaluation								
	Manual Groups (N=197)			Electric Group (N=272)			Total Sample (N=469)		
	Speed	Accuracy	Overall	Speed	Accuracy	Overall	Speed	Accuracy	Overall
Satisfactory	187	179	181	261	251	253	448	430	434
Unsatisfactory	10	18	16	11	21	19	21	39	37

Little or no predictive validity was found between typing scores and supervisor's evaluations. Absence of validity may be attributed to a number of factors, as follows:

1. Subjects had been selected partly on the basis of test performance.

2. Unsatisfactory typists may have been discharged or moved to positions not requiring typing prior to evaluation.

3. The wide variety of jobs represented in the sample do not necessarily require uniform proficiency in typing.

4. There is very little variance in the criterion measures.

Standard Industrial Classification, D.O. T. code number, and employer's specifications on speed and accuracy were also treated as predictors by applying chi square to the difference in frequencies occurring for satisfactory and unsatisfactory subjects. A subject who was rated unsatisfactory on any criterion variable was categorized as "unsatisfactory".

Table III-9 shows frequencies and percents for unsatisfactory and satisfactory subjects in eight major industries. No significant differences were found among industries with respect to the proportion of individuals evaluated as unsatisfactory.

Table III-9

Number and Percent of Subjects Listed by Industry and Supervisor's Evaluation for the Total Sample (N=469)

Industry	Unsatisfactory* Subjects (N=61)		Satisfactory** Subjects (N=408)		Total Sample (N=469)	
	Number	Percent	Number	Percent	Number	Percent
Mining			4	1	4	1
Construction	3	5	2	1	5	1
Manufacturing	11	18	88	21	99	21
Transportation, communications and public utilities	4	7	15	4	19	4
Wholesale and retail trade	8	13	52	13	60	13
Finance, real estate insurance	14	23	75	18	89	19
Services	14	23	87	21	101	22
Public administration	7	11	85	21	92	20

*Unsatisfactory subjects are those rated unsatisfactory on one or more criterion variables, namely: Supervisor's Evaluation-Speed, Supervisor's Evaluation-Accuracy, and Supervisor's Evaluation-Overall.
**Satisfactory subjects are those rated satisfactory on all three criterion variables.

Table III-10 shows frequencies and percents for unsatisfactory and satisfactory subjects having 23 different D.O.T. code numbers. Systematic differences were found. One group of court reporters and stenographers are more likely to be rated satisfactory. Subjects having an "X" in the D.O.T. code (entry level employees) are more apt to be rated unsatisfactory by supervisors.

Table III-10

Number and Percent of Subjects Listed by D.O.T. Code Number and Supervisor's Evaluation for the Total Sample (N=469)

Reference Number for D.O.T. Code Shown in Appendix B	Unsatisfactory Subjects (N=61)		Satisfactory Subjects (N=408)		Total Sample (N=469)	
	Number	Percent	Number	Percent	Number	Percent
1			1	.2	1	.2
2			1	.2	1	.2
3	11	18.0	63	15.0	74	16.0
**4	2	3.0	68	17.0	70	15.0
5			1	.2	1	.2
6	6	10.0	28	7.0	34	7.0
7			11	3.0	11	2.0
8			1	.2	1	.2
9	19	31.0	166	40.0	185	39.0
10	5	8.0	24	6.0	29	6.0
11			1	.2	1	.2
12			1	.2	1	.2
13	1	2.0			1	.2
14			1	.2	1	.2
15	1	2.0	28	7.0	29	6.0
16			1	.2	1	.2
17			1	.2	1	.2
18			1	.2	1	.2
19			3	.7	3	.6
20			2	.5	2	.4
21			1	.2	1	.2
22			1	.2	1	.2
**23	16	26.0	3	.7	19	4.0

**The distribution of unsatisfactory and satisfactory ratings on occupation is significantly different from zero at the .01 level.

Tables III-11 and III-12 show frequencies and percents for unsatisfactory and satisfactory subjects listed according to employer's speed and accuracy specifications. Employers who do not specify speed and accuracy requirements are more likely to employ typists who are unsatisfactory to them.

Table III-11

Number and Percent of Subjects Listed by Employer's Speed Specifications and Supervisor's Evaluation for the Total Sample (N=469)

Employer Speed Specification	Unsatisfactory Subjects (N=61)		Satisfactory Subjects (N=408)		Total Sample (N=469)	
	Number	Percent	Number	Percent	Number	Percent
*No specification	28	46	118	29	146	31
80 wpm or more						
70-79 wpm			6	1	6	1
60-69 wpm	5	8	39	9	43	9
50-59 wpm	10	16	82	20	92	20
40-49 wpm	11	18	117	29	128	27
39 wpm or less	1	2	5	1	6	1
Information not available	6	10	42	10	48	10

*The distributions unsatisfactory and satisfactory ratings differ significantly at the .01 level.

Table III-12

Number and Percent of Subjects Listed by Employer's Accuracy Specification and Supervisor's Evaluation for the Total Sample (N=469)

Employer's Accuracy Specification	Unsatisfactory Subjects (N=61)		Satisfactory Subjects (N=408)		Total Sample (N=469)	
	Number	Percent	Number	Percent	Number	Percent
*No specification	32	52	154	38	186	39
High accuracy	15	25	129	32	144	31
Average accuracy	8	13	70	17	78	17
Minimal accuracy			6	1	6	1
Information not available	6	10	49	12	55	12

*The distributions of unsatisfactory and satisfactory ratings differ significantly at the .05 level.

Conclusions

1. The applicant sample used in this study and the normative sample on which the typing test norms are based have different background and test performance characteristics.

2. Typing skill is essential for a wide range of jobs which do not necessarily require the same level of proficiency in typing.

3. Evaluation of subjects as satisfactory and unsatisfactory on speed, accuracy, and overall performance did not result in equally proportioned distribution of scores.

Recommendations

1. Future validation research should include test data collection on the total applicant sample including subjects who are eliminated from evaluation.

2. Future validation studies should include a preliminary investigation and classification of jobs with reference to typing duties and typical level of proficiency required.

3. Future validation studies should include preliminary study of criterion measures and selection of one that seems likely to provide optimum variance in scores for statistical treatment.

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Appendix A

DESCRIPTIVE RATING SCALE (Experimental)
(For U.S.E.S. Dictation and Spelling Tests Normative Study)

Score_____

RATING SCALE FOR_____
D.O.T. Title and Code

Directions: Please read Form SP-20, "Suggestions to Raters" and then fill in the items listed below. In making your ratings, only the one most suitable answer should be checked for each question.

Name of worker (print)_____
(Last) (First)

Sex: Male_____Female_____

Company Job Title:_____

How often do you see this worker in a work situation?

( ) See her at work all the time.
( ) See her at work several times a day.
( ) See her at work several times a week.
( ) Seldom see her in work situation.

How long have you worked with her?

( ) Under one month.
( ) One to two months.
( ) Three to five months.
( ) Six months or more.

How long has worker been employed as a secretary or stenographer by your firm?

( ) Under 6 months.
( ) 6 months to one year.
( ) 1 to 3 years.
( ) 3 to 10 years.
( ) Over 10 years.

RATED BY_____TITLE_____

NAME OF COMPANY_____

LOCATION_____DATE_____
(City) (State)

ES 629.1-I (8/66) N.Y.-DEPT. OF LABOR-D.E.

I. Proficiency in Taking and Transcribing Shorthand Dictation.

A. How fast can she take shorthand dictation? (Worker's ability to make efficient use of time and to work at high speed.)

( ) 1. Capable of very slow speed. Can perform only at an unsatisfactory pace.

( ) 2. Capable of low speed. Can perform at a slow pace.

( ) 3. Capable of fair speed. Can perform at an acceptable but not fast pace.

( ) 4. Capable of high speed. Can perform at fast pace.

( ) 5. Capable of very high speed. Can perform at an unusually fast pace.

B. How accurate is transcription of dictation taken. (Worker's ability to avoid making mistakes.)

( ) 1. Makes very many mistakes in transcribing dictation taken. Work needs constant checking.

( ) 2. Makes frequent mistakes in transcribing dictation taken. Work needs more checking than is desirable.

( ) 3. Makes mistakes occasionally in transcribing dictation taken. Work needs only normal checking.

( ) 4. Makes few mistakes in transcribing dictation taken. Work seldom needs checking.

( ) 5. Rarely makes mistakes in transcribing dictation taken. Work almost never needs checking.

C. How fast is the person in transcribing her dictation? (Ability of person to work rapidly.)

( ) 1. Capable of very low output. Can perform only at an unsatisfactory pace.

( ) 2. Capable of low output. Can perform at a slow pace.

( ) 3. Capable of fair work output. Can perform at an acceptable but not a fast pace.

( ) 4. Capable of high work output. Can perform at a fast pace.

( ) 5. Capable of very high work output. Can perform at an unusually fast pace.

II. Worker's Over-all Job Proficiency

A. How much does she know about her job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with her work.)

( ) 1. Has very limited knowledge. Does not know enough to do her job adequately.

( ) 2. Has little knowledge. Knows enough to "get by."

( ) 3. Has moderate amount of knowledge. Knows enough to do fair work.

( ) 4. Has broad knowledge. Knows enough to do good work.

( ) 5. Has complete knowledge. Knows her job thoroughly.

B. How much aptitude or facility does she have for this kind of work? (Worker's adeptness or knack for performing her job easily and well.)

( ) 1. Has great difficulty doing her job. Not at all suited to this kind of work.

( ) 2. Usually has some difficulty doing her job. Not too well suited to this kind of work.

( ) 3. Does her job without too much difficulty. Fairly well suited to this kind of work.

( ) 4. Usually does her job without difficulty. Well suited to this kind of work.

( ) 5. Does her job with great ease. Exceptionally well suited for this kind of work.

C. How large a variety of job duties can she perform efficiently? (Worker's ability to handle several different operations in her work.)

( ) 1. Cannot perform different operations efficiently.

( ) 2. Can perform a limited number of different operations efficiently.

( ) 3. Can perform several different operations with reasonable efficiency.

( ) 4. Can perform many different operations efficiently.

( ) 5. Can perform an unusually large variety of different operations efficiently.

D. How efficiently does worker use her time? (Ability of worker to budget her work time.)

( ) 1. Wastes a considerable amount of work time. Poorly organized work habits.

( ) 2. Work time not used very efficiently. Work habits could stand improvement.

( ) 3. Work time organized fairly efficiently. Work habits acceptable but not superior.

( ) 4. Quite efficient in utilization of her time. Work habits almost always superior.

( ) 5. Makes extremely efficient use of her time. Work habits almost always superior.

E. Considering all the factors already rated, and only these factors, how acceptable is her work? (Worker's "all-around" ability to do her job.)

( ) 1. Would be better off without her. Performance usually not acceptable.

( ) 2. Of limited value to the organization. Performance somewhat inferior.

( ) 3. A fairly proficient worker. Performance generally acceptable.

( ) 4. A valuable worker. Performance usually superior.

( ) 5. An unusually competent worker. Performance almost always top notch.

Appendix B

Information Recorded for Each Subject

1. Age (years)
2. Education (years)
3. Semesters or quarters of typing training completed
4. Time between initial testing and last typing training (months)
5. Experience in jobs requiring typing (months)
6. Time between initial testing and last typing job
7. Information listed under No. 4 or No. 6, whichever is lower
8. Initial typing test score -- words per minute
9. Initial typing test score -- errors
10. Initial spelling test score (Form T62-M)
11. Retest typing test score -- words per minute
12. Retest typing test score -- errors
13. Retest spelling test score (T63-M)
14. Typing speed change: retest words per minute score minus initial typing test words per minute score plus a constant of 100
15. Typing accuracy change: retest error score minus initial error score plus a constant of 100
16. Spelling change: retest spelling test score minus initial spelling test score plus a constant of 100
17. Hours per day spent typing on job on which followed up
18. Experience on job on which followed up (weeks)
19. Supervisory rating score (Form SP-21)
20. Third Edition D.O.T. six-digit code number

Appendix C

Experimental Design for Follow-up Study on
USES Typing and Spelling Proficiency Tests

Purpose:

To determine the relationships of scores on the USES typing and spelling proficiency tests administered to applicants before placement with test and job performance after placement, and to investigate the factors which affect these relationships.

Allocation of Functions:

Five State agencies will participate in obtaining the study data. One of the five will serve as key State and will conduct the data analysis.

Sample:

The sample is to consist of local office applicants tested with the USES typing and spelling proficiency tests prior to placement, placed in occupations requiring typing, and followed up on the job to obtain retest scores and ratings of job performance. Secretary, Stenographer, and Typist will be the occupations most frequently represented in the sample, but any occupation requiring typing skills may be included.

During the duration of testing for the study in local offices, individuals who might ordinarily be referred to job openings requiring typing skills without taking the typing or spelling tests should be given both of these tests.

Each participating State agency is to submit data for a final sample of at least 40 cases. In view of the sample attrition which can be expected, it will be necessary to initially test considerably more than 40 individuals.

Test Administration Before Placement:

Any form of the typing test may be used. It is to be administered and scored in accordance with the directions in "Directions for Administering and Scoring the New USES Typing Test". Individuals may be tested either on manual or electric typewriters, but a record should be kept as to which type of machine was used by each individual.

Form T62-M of the spelling test is to be given to all individuals in the potential sample. It is to be administered and scored in accordance with the "Directions for Administering and Scoring Spelling Test T62-M or T63-M," dated June 1959.

At the time of testing, the following information is to be recorded for each individual in the potential sample:

1. Age (years);
2. Education (years);
3. No. of semesters (or quarters) of typing training completed;
4. Length of time elapsed since last typing training (months);
5. Total length of experience in jobs requiring typing (months);
6. Length of time elapsed since last job requiring typing (months; record "1" for less than one month).

Follow-up: To the extent possible (limited only by the unwillingness of employers to cooperate) a follow-up should be made for each individual in the potential sample who was placed by the local office in a job requiring typing skills. Between 90 and 120 days after initial testing, (provided that the individual has been on the job at least 60 days), the employer should be contacted to ascertain that the individual is still employed and in a job requiring typing. Arrangements should be made to visit the employer to retest the individual as described below and to obtain a job performance rating from the individual's supervisor. The visit to the employer should take place within two weeks after the initial contact.

Retesting: Individuals should be retested on the employer's premises on the typewriters which they normally use on their jobs. (Individuals who were initially tested on manual typewriters and are found to be using electric typewriters on the job, or vice versa, should be eliminated from the sample before retesting.) If a suitable testing situation, free from distractions and interruptions, can be achieved at the individual's desk she may be tested there, or the testing may be done elsewhere on the employer's premises. Any

alternate form of the typing test may be used except the form used for initial testing of the individual. Form T63-M of the spelling test is to be used. Both tests are to be administered and scored in accordance with the standard directions.

At the time of retesting, the following information is to be recorded for each individual:

1. Third Edition D.O.T. title and code
2. Average no. of hours per day spent typing
3. Length of experience in present job (weeks)

Job Performance Rating:

A rating of each individual's job performance is to be obtained from her immediate supervisor at approximately the same time retesting is done, using Form SP-21 (revised 1/66).

Recording and Tabulating of Data: Detailed instructions will be provided by the national office at a later date.

Report and Submission of Data:

The participating States should submit their data (in a form to be specified by the national office at a later date) and a brief report describing the procedures followed to the national office through the appropriate regional office by October 31, 1966.

Data Analysis:

All data analysis will be carried out by the key State. Detailed instructions will be provided to key State by the national office at a later date.

Amendment to Experimental Design for Follow-up Study
on USES Typing and Spelling Proficiency Tests

Sample: The experimental design specifies that all applicants who are given the typing and spelling tests during the initial testing phase are to be included in the potential sample for whom follow-up data are to be sought. The study objectives will not be adequately met, however, if the final sample contains too large a proportion of inexperienced applicants. Accordingly, the following modification should be made in the composition of the final sample of 40 cases: Review the proportion of inexperienced applicants among those being tested initially (the potential sample) and, if necessary, randomly (with no regard to test scores) eliminate inexperienced applicants so that those remaining will comprise no more than one-fourth of the potential sample for whom follow-up data are to be sought.

Report: The report to be submitted describing the sample and procedures followed should include the number of inexperienced applicants so eliminated from the potential sample and on the number of other individuals in the potential sample who are dropped from the final sample for other reasons.

Appendix D

Information Recorded for Each Subject

1. Age (years)
2. Education (years)
3. Job experience (months)
4. Typing speed score (wpm.)
5. Typing accuracy score (errors)
6. Type of typewriter on which tested (manual or electric)
7. Third Edition D.O.T. code number
8. Average number of hours per day spent typing (2-8)
9. Length of experience on present job (weeks)
10. Standard Industrial Classification (1967)
11. Employer's specification, typing speed
12. Employer's specification, typing accuracy
13. Supervisor's evaluation, typing speed
14. Supervisor's evaluation, typing accuracy
15. Supervisor's evaluation, overall

Appendix E

Experimental Plan for Study on Relationship Between Performance on USES Typing Test and Acceptability of Typing Performance to Employers

Purposes: (1) To determine the relationship between scores on the USES Typing Test administered to applicants before placement and subsequent employers' evaluations of the acceptability of their typing performance on the job, and to investigate factors which may affect this relationship.

(2) If warranted by the results in (1), to establish minimum levels of performance on the USES Typing Test which correspond to employers' minimum requirements regarding typing proficiency.

Sample: The sample is to consist of individuals who were tested with the USES Typing Test prior to placement and were referred to and presently hold jobs requiring typing, or who were referred to and held such jobs for a significant length of time although they do not presently hold them.

Each of ten participating State agencies is to submit data for a final sample of at least 40 cases. Attrition of at least half of potential sample members can be anticipated, so it will be necessary to contact the employers of considerably more than 40 individuals in order to attain 40 cases.

Test Administration:

Any form of the USES Typing Test may be used. Speed (WPM) and accuracy scores are to be derived in accordance with the "Directions for Administering and Scoring the New USES Typing Test."

The following additional information should also be obtained for each individual in the potential sample at the time of testing:

1. Age (years)

2. Education (years)

3. Total length of experience at time of testing in jobs requiring typing (months)

4. Type of typewriter (manual or electric) on which tested

Individuals may be included in the sample even though data for them on length of typing experience are of questionable accuracy.

Follow-up: To the extent possible (limited only by the unwillingness of employers to cooperate) a follow-up attempt should be made between 90 and 120 days after testing for each individual in the potential sample who has been on his job at least 60 days. It should first be determined from the employer that the individual is still on a job requiring typing or left such a job recently enough to be accurately recalled by his former supervisor, using the same type of typewriter on which he was tested. If these conditions are met, arrangements should be made to obtain an evaluation of typing performance as described below. The visit to the supervisor should take place as soon as feasible after the initial contact with the employer.

Evaluation of Typing Performance: An evaluation of the typing performance of each worker who is still on the job is to be obtained from his immediate supervisor using a sheet similar to the attached specimen "Evaluation Sheet" (Attachment A). An evaluation should also be obtained for each individual no longer on the job provided that (1) he completed the training period for the particular job before leaving it and (2) he left recently enough that the supervisor can clearly recall his typing performance and provide a valid evaluation. Supplies of the "Evaluation Sheet" should be reproduced by State agencies. The "Evaluation Sheet" also provides for the recording of certain other information to be obtained from the supervisor regarding the individual.

The "Evaluation Sheet" is intended to obtain an evaluation of typing performance only, independent as far as possible of other aspects of job performance. It attempts to identify those individuals whose typing performance is considered marginal or inadequate by the supervisor and whom the supervisor would like to be able to replace were it not for the difficulties in discharging them, the difficulties of obtaining qualified replacements, or such other considerations. These points should be stressed in discussions with supervisors. The complete confidentiality of the evaluations should also be strongly emphasized. Evaluations should be made without supervisors' knowledge of Typing Test results.

Recording and Tabulating of Data: Data are to be submitted in the form of punched cards prepared in accordance with the attached layout (Appendix B). A worktable or tab listing showing these data should also be provided. Cards should be submitted only for cases with complete data. All punching should be verified.

Interim Reports: The Quarterly Reports of Test Research Activities for this study for July 1 - September 30 and October 1 - December 31 periods should indicate the total number of workers for whom evaluations have been obtained and the number whose overall typing performance has been evaluated as unsatisfactory.

Final Report and Submission of Data: The deck of punched cards and a brief report describing the procedures followed should be submitted through the appropriate regional office to reach the national office by February 28, 1968. The report should indicate the number of individuals in the potential sample and the number of these eliminated from the final sample for each of the following reasons: (1) lack of cooperation by employer; (2) never employed; (3) no longer employer, supervisor not able to rate; (4) had not completed training period; (5) typing not required on present job; (6) type of typewriter used on job (manual or electric) different than type on which tested; (7) other (specify).

Data Analysis: Data analysis will be carried out by the national office.

Appendix F

(Specimen) Re: _____

EVALUATION SHEET

Instructions to Supervisor

In an effort to improve our services to you, the _____ Employment Service is trying to determine how well the individuals whom we refer to typing jobs meet the typing requirements of their employers.

The person named above was recently referred to your organization by the _____ Employment Service. We would now like to obtain your evaluation of this person's typing performance.

This evaluation will be used only for research. It is strictly confidential and will not affect the worker in any way.

A worker who has not completed the training period for the job, who does not spend a significant part of her worktime typing, or who has not been on the job or under your supervision long enough for you to know how well she types should not be evaluated. Please return the "Evaluation Sheet" for any such person with a notation indicating the reason for not making the evaluation.

Your evaluation should be based only on the worker's typing performance. In making the evaluation, do not consider her conduct or how she performs the other duties of her job, only her typing. Make your evaluation in terms of her usual or typical performance, not on the basis of one "good" day, one "bad" day, or some single incident.

Evaluation

Check the statement below which best describes the worker's speed of typing, accuracy of typing, and overall typing performance (three checks). Remember to consider only her typing performance.

Speed	Accuracy	Overall	Evaluation
			Fully satisfactory
			Unsatisfactory or only barely satisfactory

Worker's Job Title _____

Length of Experience on Present Job: _____ weeks

Average Number of Hours per Day Spent Typing: _____

Kind of Typewriter Used by Worker: Manual Electric

Appendix G

Code Numbers and Job Titles from the Third Edition of the Dictionary of Occupational Titles

	Code Number	Job Title
1.	132.268	Reporter, Correspondent, Feature Reporter, Rewrite Man
2.	169.168	Adjudicator, Administrative Assistant, Administrative Secretary, Appeal Referee, Chief Clerk, Civil Defense Training Officer, Estate Planner, Examiner, Fire Assistant, Interviewer and Claims Adjuster, Laboratory Assistant, Manager, Park Ranger, Property Disposal Officer, Occupational Rating Specialist, Vital Statistics Registrar, Special Agent, Vocational Disability Examiner
3.	201.368	Secretary, Legal Secretary, Medical Secretary
4.	202.388	Court Reporter, Stenographer, Stenotype Operator
5.	203.138	Chief Telegraphic - Typewriter Operator, Typing Section Chief
6.	203.588	Telegraphic - Typewriter Operator, Typist, Perforator Typist, Wires - Transfer Clerk
7.	208.588	Braille - Machine Operator, Cryptopgraphic - Machine Operator, Photocomposing - Machine Perforator Operator, Telautograph Operator, Transcribing - Machine Operator, Typesetter - Perforator Operator
8.	209.382	Justowriter Operator
9.	209.388	Cancellation Clerk, Classified - Ad Clerk, Clerk - Typist, Continuity Clerk, Mortgage Clerk, Mortgage Processing Clerk, Reader, Reference Clerk, Special - Certificate Dictator, Statement Clerk, Title Searcher

	Code Number	Job Title
10.	209.588	Addresser, Car Checker, General Clerk, Clerk - Typist, Bardereau Clerk, Copy Holder, Credit Card Clerk, Customer Control Clerk, History Card Clerk, Library Clerk, Marker, Price Clerk, Return to Factory Clerk, Routing Clerk, Translator - Braille
11.	210.388	Audit Clerk, Distribution Accounting Clerk, Reconcilement Clerk, Billing Control Clerk, Bookkeeper, Night Auditor, Account Classification Clerk, Classification Control Clerk, Commodity Loan Clerk, Fixed - Capital Clerk, Medical Voucher Clerk, Mortgage Loan Computation Clerk
12.	211.368	Cashier I
13.	211.468	Cashier II
14.	215.388	Bookkeeping - Machine Operator
15.	219.388	Account Analyst, Actuarial Clerk, Aircraft - Log Clerk, Billing Clerk, Bond Clerk, Box - Estimator, Budget Clerk, Checker, City Collection Clerk, Clearing-House Clerk, Cable Transfer Clerk, General Office Clerk, Telegraph Service Clerk, Statistical Clerk, Timekeeper, etc.
16.	219.488	Accounting Clerk, Advertising - Space Measurer, Booking Prizer, Brokerage Clerk, Collection Sheet Clerk, Cost Clerk, Deposit Refund Clerk, Fabric and Accessories Estimator, Foreign Clerk, Grading Clerk, Insurance Checker, Rate Clerk, Toll - Rating Clerk
17.	219.588	Coin - Machine Operator, Posting Clerk, Bookman, Charge - Refer Clerk, Data - Change Clerk, Error - Ledger Clerk, Kardex Clerk, Meter - Order Clerk, Remittance Clerk, Suspense Clerk, Telegraph Service Rater

	Code Number	Job Title
18.	221.388	Chart Clerk, Expediter Clerk, Floor Clerk, Gas - Plant Clerk, Industrial - Order Break - Down Clerk, Manufacturing Order Clerk, Mill Recorder, Order Detailer, Formula Checker, Provider, Overhaul Planner, Production Clerk, Recorder, Traffic Man, Weight and Test Bar Clerk, Work - Order Clerk
19.	237.368	Admitting Officer, Appointment Clerk, Information Clerk, Out- Patient Admitting Clerk, Receptionist, Registrar, Registration Clerk
20.	249.368	Claims Clerk, Electoral Clerk, Counter Clerk, Court Clerk, Credit Clerk, Credit Reporter, Deposit Clerk, Form Checker, Fingerprint Clerk, Library Assistant, License Clerk, Loan Officer, New - Account Clerk, Order Clerk, Reconsignment Clerk, Religious - Affairs Clerk, Reservation Clerk, Safe - Deposit Clerk, Test Technician, Tracer Clerk
21.	289.458	Salesperson
22.	299.388	Stamp Classifier
23.	All other numbers	All code numbers with an "X" are listed in the category "all other numbers". An "X" is used to denote an entry worker who is not fully qualified to carry out the duties of a specific occupation because of lack of sufficient training or experience.

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